

# 3 Degree of Freedom Platform | TRI-BOT-50

NEW

Preliminary Available Q2, 2026

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TRI-BOT-50 is a compact tip-tilt and Z motion platform measuring 51 × 51 mm and just 47 mm tall. Its miniature tripod design enables precise angular positioning and adjustment of components in three degrees of freedom with sub-micrometer resolution. A full 360° Z-axis rotation can be integrated under the platform, providing versatile motion for complex alignment tasks. Vacuum-compatible versions (down to 10<sup>-9</sup> mbar) are also available, making TRI-BOT-50 ideal for applications requiring high-precision angular control in a compact footprint. The MMC-110 controller and all required software program libraries are included with the TRI-BOT-50, which operates on Hexasoft software.

## KEY FEATURES

- Travel range of ±2.5mm Z, ±9° by ±10° tilt from center (any orientation possible)
- Load capacity up to 300g (orientation dependent)
- 22 mm maximum diameter aperture (without rotation stage)
- Crossed roller bearings
- 45.5 mm height at center position, 43 mm height at minimum position
- Vacuum and non-magnetic versions available

## TECHNICAL DATA

Tz Travel range [mm]	± 2.5
Rx Travel range [deg]	± 9
Ry Travel range [deg]	± 10
Rz Travel range [deg]	± 360 (Optional PR-20)
Weight [g]	160
Motor option	Piezo Motor
Speed, max	5mm/s, 10 deg/s (MMC-110)
Encoder option	Digital Incremental (RS-422)
Resolution Tz [nm]	40
Resolution Rx, Ry [μdeg]**	100
Repeatability Tz [nm]	± 200
Repeatability Rx, Ry [μdeg]**	200
Materials	aluminum body, steel bearing (other materials i.e. stainless steel, titanium, etc. available upon request)

## ORDERING INFORMATION

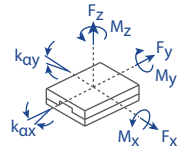
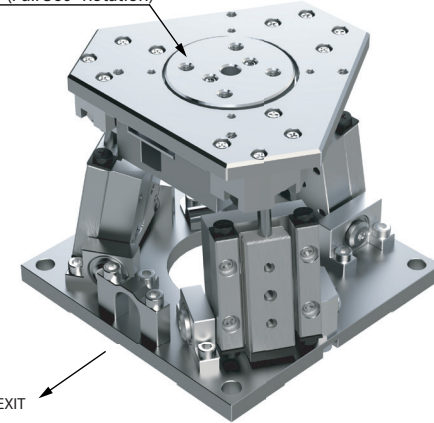
TRI-BOT-50 - 1 1 3 0

DRIVE	Piezo Motor, PM-002.....	1
TRAVEL	See Technical Data.....	1
ENCODER	Digital (RS-422).....	3
LIMIT SWITCH	None .....	0
ENVIRONMENT	Atmospheric .....	0
	High Vacuum, 10 <sup>-6</sup> mbar .....	6
	Ultra High Vacuum, 10 <sup>-9</sup> mbar .....	9
	Non-Magnetic .....	M

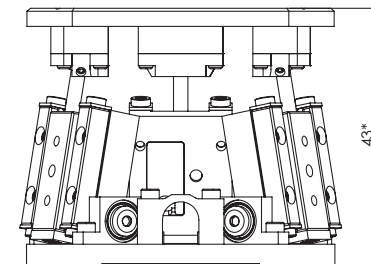
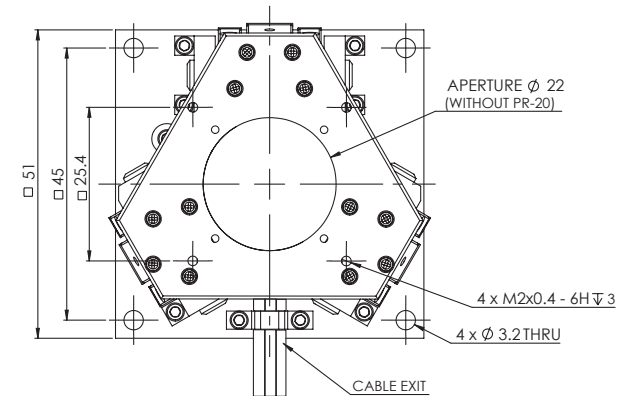
\*\* Refer to PR-20 datasheet for Rz Resolution and Repeatability

Load, max	F <sub>x</sub> [N]	F <sub>y</sub> [N]	F <sub>z</sub> [N]	M <sub>x</sub> [N-m]	M <sub>y</sub> [N-m]	M <sub>z</sub> [N-m]	k <sub>ax</sub> [μrad/N-m]	k <sub>ay</sub> [μrad/N-m]
PM-002	2	2	3	-	-	-	-	-

Optional PR-20\*\* (Full 360° Rotation)



CABLE EXIT



all dimensions are in millimeters  
\* height of 43mm is at the minimum position

Specifications are subject to change without notice.